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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/056,715	01/25/2002	Thomas M. Aune	O119.12-0013	3167

164            7590            04/09/2003

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EXAMINER

OCAMPO, MARIANNE S

ART UNIT	PAPER NUMBER
1723	5

DATE MAILED: 04/09/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

**Office Action Summary**

Application No.

10/056,715

Applicant(s)

AUNE ET AL.

Examiner

Marianne S. Ocampo

Art Unit

1723

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --  
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM  
THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) Responsive to communication(s) filed on 16 September 2002.
- 2a) This action is FINAL.                    2b) This action is non-final.
- 3) Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) Claim(s) 1-16 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) Claim(s) \_\_\_\_\_ is/are allowed.
- 6) Claim(s) 1-16 is/are rejected.
- 7) Claim(s) \_\_\_\_\_ is/are objected to.
- 8) Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) The specification is objected to by the Examiner.
- 10) The drawing(s) filed on \_\_\_\_\_ is/are: a) accepted or b) objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) The proposed drawing correction filed on \_\_\_\_\_ is: a) approved b) disapproved by the Examiner.  
If approved, corrected drawings are required in reply to this Office action.
- 12) The oath or declaration is objected to by the Examiner.

**Priority under 35 U.S.C. §§ 119 and 120**

- 13) Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) All b) Some \* c) None of:  
1. Certified copies of the priority documents have been received.  
2. Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.  
3. Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.
- 14) Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a)  The translation of the foreign language provisional application has been received.
- 15) Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

**Attachment(s)**

- 1) Notice of References Cited (PTO-892)
- 2) Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) Information Disclosure Statement(s) (PTO-1449) Paper No(s) 2,4.
- 4) Interview Summary (PTO-413) Paper No(s) \_\_\_\_\_.  
5) Notice of Informal Patent Application (PTO-152)
- 6) Other:

## **DETAILED ACTION**

### ***Claim Rejections - 35 USC § 102***

1. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

### ***Claim Rejections - 35 USC § 103***

2. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

3. Claims 1 - 4 and 9 - 10 are rejected under 35 U.S.C. 102(b) as anticipated by or, in the alternative, under 35 U.S.C. 103(a) as obvious over Till et al. (US 3,073,735).

4. Concerning claims 1 and 4, Till et al. disclose a nonwoven filter cartridge (shown in fig. 10) comprising a cylindrical core member (50), a first cylindrical mass (49) of essentially continuous, intertwined and thermally bonded polymer filaments (fine fibers A, inside/closer to the core 50) adjacent to the core member (50), the polymer filaments (A) of the first mass having diameters of less than about 1.5 microns, particularly from about 0.5 microns to about 3 microns, and to about 10 microns, as in cols. 1- 6 and claim 4, and a second cylindrical mass (47) of essentially continuous, intertwined and thermally bonded polymer filaments (coarse fibers, B) adjacent the first mass (49) of polymer filaments (A), the polymer filaments (B) of the second mass (47) having diameters greater than 1.5 microns, particularly having diameters from 10 to 12 microns and greater, as in cols. 2 - 3 & 6. Till et al. have disclosed all the structural limitations (see above) of the claimed invention (i.e. non-woven filter cartridge) except for the properties/functions of the nonwoven filter cartridge of *having an efficiency in removing 1 micron particles being greater than or equal to 99.9% and a pressure drop across the cartridge being less than 3 pounds per square inch for every gallon per minute of flow through a 10 inch long section of the cartridge (as in claim 1), and a pressure drop across the filter cartridge being about 1.5 pounds per square inch for every gallon per minute of flow through a 10 inch long section of the cartridge (as in claim 4)*. The examiner cannot determine whether or not the reference inherently possesses the properties which anticipates or renders obvious these properties or functions of the claimed invention, and has basis for shifting the burden of proof to applicants as in In re Fitzgerald, 619 F. 2d 67, 205 USPQ 594 (CCPA 1980). See M.P.E.P. §§ 2112 – 2112.02.

5. With respect to claim 2, Till et al. also disclose some of the filaments (fine fibers, A) in the first mass (49) having diameters less than about 1 micron, particularly those having a diameter of about 0.5 microns to less than about 1 micron, as in cols. 5 - 6 and claim 4.

6. Regarding claim 3, Till et al. further disclose the filaments (coarse fibers, B) of the second mass (47) having diameters ranging from 10 microns and greater, as in cols. 2 – 3. Here, the prior art and the claimed range overlap at diameters having at least the maximum value of 10 microns. In the case where claimed ranges “overlap or lie inside ranges disclosed by the prior art”, a *prima facie* case of obviousness exists. See case laws, *In re Wertheim*, 541 F.2d 257, 191 USPQ 90 (CCPA 1976) and *In re Woodruff*, 919 F.2d 1575, 16 USPQ2d 1934 (Fed. Cir. 1990), and *In re Geisler*, 116 F.3d 1465, 1469-71, 43 USPQ2d 1362, 1365-66 (Fed. Cir. 1997), and MPEP §§ 2144.05, part I.

7. With regards to claim 9, Till et al. also disclose a transition region (C) including filaments from the first mass intertwined with filaments from the second mass (i.e. fine fibers A mixed and intertwined with coarse fibers B), as in figs. 1 – 4 and cols. 1 – 6.

8. Concerning claim 10, Till et al. disclose the cartridge (shown in fig. 10 at least) including a density gradient between the first filament mass (49) and the second filament mass (47), as in cols. 3 – 6 and figs. 2 & 10.

9. Claims 5 - 8 and 11 – 16 are rejected under 35 U.S.C. 103(a) as being unpatentable over Till et al. (735) in view of Barboza et al. (US 5,783,011).

10. Regarding claims 5 - 6, Till et al. fail to disclose the first mass comprising a first filament zone and a second filament zone wherein the first filament zone defining a calendered layer having a density of filaments substantially greater than that of the second filament zone. Barboza et al. teach a similar nonwoven filter cartridge to that of Till et al., which formed by a slightly different process in which a nip area of a press roller is used to form a denser and smoother inner region (i.e. a calendered layer) adjacent to/onto a rotating mandrel which becomes the core (12) of the cartridge by the impact of the nip area onto the rotating core/mandrel (12) as filaments of a first mass (Z1) are formed thereon, thereby creating a first filament zone (calendered/compressed area) adjacent the core/mandrel (12) and a second filament zone of non-compressed/non-calendered zone of fibers in Z1, as in figs. 1 & 4 and in cols. 1 - 6. Barboza et al.'s nonwoven filter cartridge also comprises a first cylindrical mass of essentially continuous, intertwined and thermally bonded polymer filaments (Z1) positioned over the core member (12) having diameters which range from about 1 micron to about 50 microns and a second cylindrical mass (Z2), Z3) disposed over the first mass (Z1), wherein the diameters of the filaments in the second mass range between about 60 microns to about 500 microns, and at least some of the filaments (i.e. support fibers, Z2, Z3) of the second mass are intertwined (fused and bonded) with polymer filaments (filtration fibers, Z1) of the first mass, as in cols. 1 – 6 and

fig. 1. It is considered obvious to one of ordinary skill in the art at the time of the invention to modify the nonwoven filter cartridge of Till et al., by adding the embodiment taught by Barboza et al., in order to provide an improved filter cartridge which has an added capability of withstanding significant pressure drops across its radial thickness, particularly in the area of the filaments nearest/closest to the core, thereby providing a more durable and longer lasting filter cartridge. The formation of a calendered layer created by the bonding of fibers and impact of the nip area onto the rotating mandrel/core (12) would allow the cartridge to form a support layer closest to the core which would create a layer that can withstand pressure drops thereacross.

11. Concerning claim 11, Till et al. disclose a nonwoven filter cartridge (shown in fig. 10) comprising a cylindrical core member (50), a first cylindrical mass (49) of essentially continuous, intertwined and thermally bonded polymer filaments (fine fibers A, inside/closer to the core 50) adjacent to the core member (50), the polymer filaments (A) of the first mass having diameters of less than about 1.5 microns, particularly from about 0.5 microns to about 3 microns, and to about 10 microns, as in cols. 1- 6 and claim 4, and a second cylindrical mass (47) of essentially continuous, intertwined and thermally bonded polymer filaments (coarse fibers, B) adjacent the first mass (49) of polymer filaments (A), the polymer filaments (B) of the second mass (47) having diameters greater than 1.5 microns, particularly having diameters from 10 to 12 microns and greater, as in cols. 2 - 3 & 6. Till et al. fail to disclose a portion of the first mass of polymer filaments forming a calendered layer positioned adjacent the core member. Barboza et al. teach a similar nonwoven filter cartridge to that of Till et al., which formed by a slightly

different process in which a nip area of a press roller is used to form a denser and smoother inner region (i.e. a calendered layer) adjacent to/onto a rotating mandrel which becomes the core (12) of the cartridge by the impact of the nip area onto the rotating core/mandrel (12) as filaments of a first mass (Z1) are formed thereon, as in fig. 1 and in col. 5. Barboza et al.'s nonwoven filter cartridge also comprises a first cylindrical mass of essentially continuous, intertwined and thermally bonded polymer filaments (Z1) positioned over the core member (12) having diameters which range from about 1 micron to about 50 microns and a second cylindrical mass (Z2), (Z3) disposed over the first mass (Z1), wherein the diameters of the filaments in the second mass range between about 60 microns to about 500 microns, and at least some of the filaments (i.e. support fibers, Z2, Z3) of the second mass are intertwined (fused and bonded) with polymer filaments (filtration fibers, Z1) of the first mass, as in cols. 1 – 6 and fig. 1. It is considered obvious to one of ordinary skill in the art at the time of the invention to modify the nonwoven filter cartridge of Till et al., by adding the embodiment taught by Barboza et al., in order to provide an improved filter cartridge which has an added capability of withstanding significant pressure drops across its radial thickness, particularly in the area of the filaments nearest/closest to the core, thereby providing a more durable and longer lasting filter cartridge. The formation of a calendered layer created by the bonding of fibers and impact of the nip area onto the rotating mandrel/core (12) would allow the cartridge to form a support layer closest to the core which would create a layer that can withstand pressure drops thereacross. Till et al. as modified by Barboza et al., have disclosed all the structural limitations (see above) of the claimed invention (i.e. non-woven filter cartridge) except for the properties/functions of the nonwoven filter

cartridge of *having an efficiency in removing 1 micron particles being greater than or equal to 99.9% and a pressure drop across the cartridge being less than 3 pounds per square inch for every gallon per minute of flow through a 10 inch long section of the cartridge (as in claim 11)*.

The examiner cannot determine whether or not the reference inherently possesses the properties which anticipates or renders obvious these properties or functions of the claimed invention, and has basis for shifting the burden of proof to applicants as in *In re Fitzgerald*, 619 F. 2d 67, 205 USPQ 594 (CCPA 1980). See M.P.E.P. §§ 2112 – 2112.02.

12. Regarding claim 12, Till et al. has disclosed the filaments of the first mass (i.e. fine fibers, A of 49) having diameters of between about 0.5 microns and about 3 microns up to 10 microns, which include the claimed range of about 0.5 microns and about 1 microns, as in cols. 2 – 6 and claim 4.

13. With respect to claim 13, Till et al. further disclose the filaments (coarse fibers, B) of the second mass (47) having diameters ranging from 10 microns and greater, as in cols. 2 – 3. Here, the prior art and the claimed range overlap at diameters having at least the maximum value of 10 microns. In the case where claimed ranges “overlap or lie inside ranges disclosed by the prior art”, a *prima facie* case of obviousness exists. See case laws, *In re Wertheim*, 541 F.2d 257, 191 USPQ 90 (CCPA 1976) and *In re Woodruff*, 919 F.2d 1575, 16 USPQ2d 1934 (Fed. Cir. 1990), and *In re Geisler*, 116 F.3d 1465, 1469-71, 43 USPQ2d 1362, 1365-66 (Fed. Cir. 1997), and MPEP §§ 2144.05, part I.

14. Concerning claim 14, Till et al. disclose the filaments (coarse fibers, B) of the second mass (47) having diameters larger than the diameters of the filaments (fine fibers, A) of the first mass (49), as in cols. 1 – 6.

15. With regards to claims 7 and 15, although Till et al. as modified by Barboza et al., do not teach the thickness of the calendered layer being about 5 mils (127 microns or 0.005 inch), it is considered the value of about 5 mils for the thickness of the calendered layer being the optimum value of a result effective variable. The thickness of the calendered/compressed area of fibers in Z1, would depend upon the desired results by the user, which could be whatever is sufficient to overcome any pressure drops and ensure durability and non-collapse of the fine fibers closest to the core during use of the cartridge, which in this instance could be a value of about 5 mils. The case law, In re Boesch, 617 F.2d 272, 205 USPQ 215 (CCPA 1980) has stated:

“The discovery of an optimum value of a result effective variable in a known process is ordinarily within the skill of the art, and thus a prima facie case of obviousness is established.”

16. Regarding claims 8 and 16, Till et al. as modified by Barboza et al. teach (as a result of the combination) that the second cylindrical mass would be substantially thicker than about 5 mils (thickness of the calendered layer) as in fig. 4 of Barboza et al. In Fig. 4, the zone/region (i.e. second cylindrical mass) formed by fibers in Z2 & Z3 forms a thicker region than the those

fibers occupied by the fibers in Z1, and since the fibers in Z1 is divided between those calendered/compressed initially with a nip area of a press roller as it is being formed onto the core/mandrel (12) and other fibers in Z1, then the thickness of the second cylindrical mass (i.e. that of Z2 & Z3) would have to be substantially greater than the calendered layer (which has a value of about 5 mils). In addition, since the second filament zone is non-compressed or non-calendered, it is considered obvious that the mass of fibers formed in this zone would be substantially thicker than about 5 mils, which is the value of the thickness of the calendered layer.

***Conclusion***

17. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. US Patents 4,726,901 (Pall et al.), 3,801,400 (Vogt et al.), 4,240,864 (Lin) and 5,340,479 (Szczepanski et al.) and 6,358,417B1 (Aune et al.).

18. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Marianne S. Ocampo whose telephone number is (703) 305-1039. The examiner can normally be reached on Mondays to Fridays from 8:00 A.M. to 4:30 P.M..

19. If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Wanda Walker can be reached on (703) 308-0457. The fax phone numbers for the organization where this application or proceeding is assigned are (703) 872-9310 for regular communications and (703) 872-9311 for After Final communications.

20. Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 308-0661.

*[Signature]*  
M.S.O.  
April 7, 2003

*Joseph Dodge*  
JOSEPH DODGE  
PRIMARY EXAMINER